

NATIONAL WEATHER SERVICE INSTRUCTION 10-312

May 21, 2002

Operations and Services

MARINE AND COASTAL WEATHER SERVICE PROGRAM, NWSPD 10-3

GREAT LAKES MARINE SERVICES

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Signed

April 4, 2002

Gregory A. Mandt
Director, Office of Climate,
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Date

GREAT LAKES MARINE SERVICES

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1. Purpose. The Great Lakes marine products provide forecast and warning information to a wide variety of mariners and recreational users who travel on the U.S. waters of the Great Lakes.

2. Responsibilities. NWSI 10-302 shows the WFO areas of responsibility for Great Lakes forecasts and warnings. In addition to its Open Lake Forecast (GLF) and Nearshore Forecast (NSH) responsibilities, WFO Cleveland produces the following products combining information from all the Great Lakes: Marine Monitoring Message (MARMON), Great Lakes Weather Broadcasts (LAWEB), Great Lakes Storm Summary (GLS), and Great Lakes Marine Alert Message (MAW). WFO Cleveland also maintains the centralized dissemination systems discussed in NWSI 10-304.

3. Open Lakes Forecasts. For the particular Lake covered, include in the GLF all U.S. waters. Exception, when a NSH is available, do not overlap the GLF into the NSH area.

3.1 GLF - Product Issuance. Issue GLFs four times a day with updates as necessary. Forecasters should release GLFs no earlier than one hour before the scheduled issuance times noted below. In the communications header, list the issuance time in UTC, but list the valid time, in the mass media header, in local time.

<u>Time Period</u>	<u>Scheduled Issuance Times (UTC)</u>
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Standard Time	0300	0900	1500	2100
Daylight Savings	0200	0800	1400	2000

In the GLFs, include forecast periods as shown below. Use the day of the week to describe forecast periods for all but the current day. For example, in a forecast issued Sunday evening include: TONIGHT, MON, MON NIGHT, etc.

The morning/early afternoon forecast periods:

Today/This Afternoon (or equivalent)	(Issuance time to 6PM)
Tonight	(6PM to 6AM)
(Next Day)	(6AM to 6PM)
(Next Day) Night	(6PM to 6AM)
(Day 3)	(6AM to 6PM)
(Day 3) Evening (Optional)	(6PM to Midnight)
(Day 4)	(Midnight to Midnight)
(Day 5)	(Midnight to Midnight)

The afternoon/evening/late night forecast periods:

Tonight/Rest of Tonight (or equivalent)	(Issuance time to 6AM)
(Next Day)	(6AM to 6PM)
(Next Day) Night	(6PM to 6AM)
(Day 2)	(6AM to 6PM)
(Day 2) Night	(6PM to 6AM)
(Day 3)	(6AM to 6PM)
(Day 3) Evening (Optional)	(6PM to Midnight)
(Day 4)	(Midnight to Midnight)
(Day 5)	(Midnight to Midnight)

3.2 GLF - Content/Format. Use the format for the GLF as shown below. Include all required forecast parameters and forecast periods in each marine zone. Forecasters may divide each marine zone into no more than two segments (east/west for Lakes Superior, Erie, and Ontario; and north/south for Lakes Michigan and Huron). The two segments do not necessarily have to be of equal size (e.g., "NORTHERN QUARTER OF LAKE MICHIGAN" or "EASTERN TWO THIRDS OF LAKE ONTARIO"). If geographic reference points are used when delineating the subdivision, forecasters should ensure they are well known.

Forecasters should include applicable National Marine Sanctuaries as noted in NWSI 10-302 in the appropriate GLF.

Forecasters may combine periods if, in the forecasters opinion, the weather elements in each are consistent. They may subdivide the first period of any GLF to account for rapid weather changes.

WFO Detroit-Pontiac forecasters will issue the Lake St. Clair Forecast following the format of the GLF. Exceptions: During the period when NSHs are issued, these forecasters should also include sky conditions and small craft advisories in the Lake St. Clair Forecast.

(WMO ID)(ISSUANCE DATE TIME)
(AWIPS ID)
(AREAL UGC CODE)-(EXPIRATION TIME)-

OPEN LAKES FORECAST FOR (GREAT LAKE)
NATIONAL WEATHER SERVICE (CITY)(STATE)
(VALID TIME) AM/PM (LOCAL TIME ZONE)(DAY)(DATE)

.SYNOPSIS...Text

...HEADLINE(S) (If needed)...

.PERIOD 1...

.PERIOD 2...

.PERIOD 3...

.PERIOD 4...

.PERIOD 5...

.PERIOD 6 (If Needed)...

.PERIOD 7 (If Needed)...

.(Day 4)...

.(Day 5)...

(WAVES OMITTED FOR MOSTLY ICE COVERED AREAS.- included in season)

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&&STORM (If needed, see section 7)

FORECASTER NAME (OPTIONAL)

3.2.1 Areal Descriptor. To highlight the demarcation between the NSH and GLF, append the phrase "LAKE (NAME) FORECAST BEYOND FIVE NAUTICAL MILES FROM SHORE" as noted. Omit this phrase when the NSH is not issued.

3.2.2 Synopsis. The GLF synopsis should be a concise, understandable description of the significant surface weather features affecting the Lake and its surrounding region through the forecast period. At a minimum, it should identify major systems and the strength, trend, and movement of each. For those highs and lows that are discussed, forecasters should include central pressures to the nearest .1 of an inch.

3.2.3 Headlines. Use headlines in the GLF to emphasize weather events likely to have a

significant impact on mariners or marine operations. In each headline, indicate the severity of the event in priority order given below.

The most significant headline generally should stand alone. However, the forecaster may include more than one headline to indicate multiple threats or worsening conditions. Do not include a headline that downgrades a current condition in later periods (e.g., a storm warning in effect improving to a gale warning).

Forecasters should include in the headline a general statement of the weather posing the threat, the time period covered, and, if necessary, the specific area impacted.

Except for severe local storm watches, forecasters should not use specific times (e.g., GALE WARNING IN EFFECT AFTER 9AM).

In the GLF, use the following headlines, in the priority order given, if appropriate criteria are occurring or are expected to be met.

- a. Hurricane Force Wind Warning
- b. Storm Warning
- c. Gale Warning
- d. Heavy Freezing Spray Warning
- e. Lakeshore Flood Warning*
- f. Tornado Watch
- g. Severe Thunderstorm Watch
- h. Lakeshore Flood Watch*

*Include headlines for lakeshore events in appropriate NSH forecasts. However, do not headline these events in the GLF.

Based on event significance, forecasters may include advisories for events expected to impact the forecast area such as freezing spray, volcanic ash, restrictions lowering visibilities below 1 NM, or for low water. Do not include small craft advisories in GLFs.

3.2.4 1-3 Day Forecast Periods. Except as noted below, include forecasts of wind and waves in each discrete forecast period in each GLF. Forecasters should also include forecasts of other weather significantly impacting the marine zone(s) (e.g., ice accretion, precipitation, low visibilities, etc.). Emphasize the most critical conditions.

3.2.5 4-5 Day Forecast Periods. Include wind and wave conditions in each 24 hour period. Otherwise, forecasters should only include the more threatening weather conditions.

3.3 GLF - Forecast Parameters

3.3.1 Winds. Winds represent predominant conditions about 10 meters above the surface of the water. Give wind direction to eight points of the compass. Avoid such phrases as "N TO NE WINDS". Forecasters may indicate changes with terms such as BECOMING, or by dividing the forecast area into segments. Up to 25 knots, describe wind speeds in 5 or 10 knot ranges, rounded to the nearest 5 knots. Thereafter, use a single wind speed (e.g., WINDS TO 35 KNOTS.)

3.3.2 Waves. The forecast wave heights should represent the most consequential significant waves in the forecast area. Forecasters may either use one value or a small range in values.

Do not use terms such as ROUGH and MODERATE or open ended terms such as WAVES GREATER THAN 5 FEET.

Do not forecast waves when ice covers a major part (approximately 80 percent) of the Marine Zone. When this occurs, add the phrase "WAVES OMITTED FOR MOSTLY ICE COVERED AREAS" directly following the final forecast period.

3.3.3 Significant Weather/Visibility. Forecasters should include significant weather posing a hazard to navigation when expected (i.e., fog or heavy precipitation lowering visibilities to 6 NM or less, or thunderstorms). Forecasters may use precipitation probability terms "CHANCE", "OCCASIONAL", etc., as defined in WSOM Chapter C-11/NWSI 10-503. However, forecasters should not include sky cover.

Forecasters may include specific visibility distances based on local or regional guidelines. However, do not use qualitative descriptions such as "VISIBILITY FAIR".

Forecasters should emphasize thunderstorms in GLFs. They may include the phrase "WINDS AND WAVES HIGHER NEAR THUNDERSTORMS" but only with respect to the most significant thunderstorms. If a moderate or high risk of severe weather is indicated for a Marine Zone, forecasters should use phrases such as "STRONG THUNDERSTORMS ARE POSSIBLE" or "THUNDERSTORMS SOME POSSIBLY SEVERE".

3.3.4 Icing. Forecasters should include a headline whenever ice accretion on exposed surfaces is likely. Because ice accumulation rates are ultimately dependent on individual ship characteristics and operating conditions, only use the following terms:

Freezing Spray
Heavy Freezing Spray

3.3.5 Air Temperatures. Air temperatures are optional. However, they should only be included if they are forecast to be at or below freezing and if the forecaster considers this information to be significant.

3.4 GLF - Unscheduled Forecasts. As needed, append either "...UPDATED" or "...CORRECTED" to the product header whenever, respectively, an unscheduled GLF is issued or when an error in the GLF is corrected. Add a short description of the updated or corrected items just below the areal header to highlight the change.

In addition to normal update criteria noted in NWSI 10-303, forecasters should update GLFs when a tornado watch has been issued and severe thunderstorms are not in the forecast, or when a severe thunderstorm watch has been issued and thunderstorms are not in the forecast.

4. Coded Marine Forecast (MAFOR). The MAFOR, adapted from WMO code FM-61-IV, is a coded version of the first 24 hours of the GLF. No MAFOR is done for Lake St. Clair.

4.1 MAFOR - Product Issuance. Append the MAFOR to every GLF making it valid one hour after that GLF.

4.2 MAFOR - Content/Format. Forecasters may issue the MAFOR either for an entire lake or for a lake segment. It will reflect the predominant conditions over that area for the 24 hour period. Follow the format shown in Appendix A.

At the end of the MAFOR, include a range of waves for the 24-hour period. Note changes of greater than 5 feet during this period. The final MAFOR group, 2GWvWv, is used only for the MARMON program. As such, include just the first 6 hours' wave conditions in the MAFOR.

4.3 MAFOR - Forecast Parameters

4.3.1 Wind (sustained). Use the following for conversion from plain language to the MAFOR code:

1. Wind Direction: Forecasters should use a single wind direction as given in the plain language forecast. Periodically, since the minimum time period in the code is 3 hours, the forecaster may have to show wind shifts with frontal passages using an additional group "9".
2. Wind Speed: Use the following to convert wind speeds from the narrative forecast to the code:

<u>Narrative Value</u>	<u>Code</u>
Less than 10, light, or 5-10	0

5-15, 10-15	1
10-20, 15-20	2
15-25, 20-25	3
30	4
35	5 GW
45	6 GW
50/55	7 SW
60	8 SW
higher values	9 HFW

GW = Gale Warning,

SW = Storm Warning,

HFW = Hurricane Force Wind Warning.

4.3.2 Forecast Weather. The code used will identify the most significant weather. When precipitation is categorical or likely, the forecaster should include it as the last digit of a main group. However, the forecaster should denote chance precipitation as a "9" (occasional) group or in plain language remarks after the numerical text.

4.4 MAFOR - Unscheduled Forecasts. Forecasters should update MAFORS when necessary to ensure consistency with the GLF. In such cases, since these products are subdivided into no less than 3 hour blocks, the MAFOR will be valid from the nearest 3 hour of the new issuance time to the ending valid time of the MAFOR being updated. For example, a MAFOR valid from 16 UTC to 16 UTC amended at or before 1729 UTC would still be valid from 16 UTC. However, this MAFOR amended at 1730 UTC to 2029 UTC would be valid at 19 UTC. In both cases, the MAFOR is valid until 16 UTC. Also, in the update, add the letters AMD following the effective starting time.

5. Nearshore Forecasts. Issue NSHs throughout the boating season dependent on ice conditions or on the entrances to each individual Lake. Begin issuance of these around April 1st and end usually in late December. The responsible regions will annually determine specific beginning and ending dates for NSHs on each Lake.

Nearshore refers to the over water area extending to 5 NM perpendicular from the shore line. Forecasters should ensure that NSHs are consistent with their adjacent GLF.

5.1 NSH - Product Issuance. Issue NSHs four times a day following the scheduled issuance time noted below. Forecasters should release NSHs no earlier than one hour before the scheduled issuance times noted. In the communications header, list the issuance time in Universal Time Coordinated (UTC), but in the mass media header, list the valid time in local time.

<u>Time Period</u>	<u>Scheduled Issuance Times (UTC)</u>			
Standard Time	0400	1000	1600	2200
Daylight Savings	0300	0900	1500	2100

5.2 NSH - Content/Format. The same rules as noted in Section 3.2 apply except only four forecast periods are included. For those customers wanting extended information, forecasters should include a statement referring users to the appropriate GLF.

Include a statement such as:

“THIS IS THE LAST (AWIPS ID) ISSUANCE FOR 20XX. THE
(AWIPS ID) WILL AGAIN BE ISSUED AROUND APRIL 1 20XX.”

below period 4 of the last NSH product of the year.

NSHs will adhere to the following format:

(WMO ID)(ISSUANCE DATE TIME)
(AWIPS ID)

NEARSHORE MARINE FORECAST
NATIONAL WEATHER SERVICE (CITY)(STATE)
(VALID TIME) AM/PM (LOCAL TIME ZONE)(DAY)(DATE)

FOR WATERS WITHIN FIVE NAUTICAL MILES OF SHORE ON LAKE
(NAME)

(AREAL UGC CODE[S])-(EXPIRATION TIME)-
(FORECAST AREA DESCRIPTOR[S])
(VALID TIME) AM/PM (LOCAL TIME ZONE)(DAY)(DATE)

...HEADLINE(S) (If needed)...

.PERIOD 1...

.PERIOD 2...

.PERIOD 3...

.PERIOD 4...

SEE LAKE (NAME) OPEN LAKES FORECAST FOR DAYS 3 THROUGH 5.

(Last issuance statement - if needed)

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Forecaster Name (Optional)

5.2.1 Headlines. Same as 3.2.3 except include small craft advisories in the NSH when appropriate criteria have been or are expected to be met. Also, forecasters may use cautionary small craft statements (Example: SMALL CRAFT SHOULD EXERCISE CAUTION) in borderline situations.

5.2.2 1-2 Day Forecast Periods. Same as paragraph 3.2.4 except include either sky condition or significant weather in all forecast periods.

5.2.3 3-5 Day Forecast Periods. Do not include an extended forecast in the NSH.

5.3 NSH - Forecast Parameters

5.3.1 Winds. Same as 3.3.1 except assume winds are to be at or near (within 3 meters) the surface of the water.

5.3.2 Waves. Same as 3.3.2.

5.3.3 Significant Weather/Visibility. Same as 3.3.3 except forecasters should include sky cover if there is no other significant weather.

5.3.4 Icing. Same as 3.3.4.

5.3.5 Air Temperatures. Same as 3.3.5.

5.3.6 Other Information. Based on local requirements, forecasters may include other pertinent information (e.g., water temperatures or water levels) at the end of the forecast.

5.4 NSH - Unscheduled Forecasts. Same as 3.4.

6. Great Lakes Storm Summary - (GLSCLE). WFO Cleveland will produce a GLS covering all of the Great Lakes whenever storm or hurricane force winds are observed on any of the Great Lakes and are expected to continue for 6 hours or more. Forecasters should update these summaries every three hours until the storm conditions have ended. Do not include Lake St. Clair as a separate entity in the GLS.

Use the format for the GLS as follows:

(WMO ID)(ISSUANCE DATE TIME)
(AWIPS ID)

SPECIAL GREAT LAKES MARINE STORM SUMMARY
NATIONAL WEATHER SERVICE CLEVELAND OH
(VALID TIME) AM/PM (LOCAL TIME ZONE)(DAY)(DATE)

A...STORM LOCATION

(Text to include the latitude and longitude of the low pressure system center causing the storm force winds and its relation to a known location)

B...STORM MOVEMENT

(Text to include direction and speed, in knots, of the low pressure system)

C...HIGHEST REPORTED SUSTAINED WINDS OVER THE LAST 3 HOURS

LAKE	LAT	LONG	LOCATION	DIR/SPD	GUST
------	-----	------	----------	---------	------

(Text to include latest reports from all Great Lakes)

D...STORM INTENSITY/TREND

(Text to include the central pressure of the low in inches and millibars and how this is expected to change over the next 3 hours.)

E...CURRENT WARNINGS

(Text to include all gale, storm, or hurricane force wind warnings in effect for any of the Great Lakes)

F...REMARKS...(Text to include longer term expectations of the storm system and when the next GLS should be issued.)

7. Great Lakes Marine Alert Message (MAW). WFO Cleveland will compile and transmit a MAW whenever storm force or greater winds are included in any portion of any GLF. The WFO issuing the GLF will indicate such winds by including &&STORM on the line after the termination symbol following the extended forecast. Cleveland should produce the MAW no later than 30 minutes after such an indicator is detected. Use the MAW format as shown in Appendix B.

8. Marine Monitoring Message (MARMON). MARMON is an automated product issued by WFO Cleveland which compares Great Lakes observations with the appropriate MAFORs, highlights significant discrepancies, and forwards these to the responsible WFO. The format for this is included in Appendix B. WFO Cleveland should coordinate MARMON program changes with the other Lake's WFOs.

9. Great Lakes Weather Broadcasts (LAWEB). The LAWEB is an automated round-up of all Great Lakes weather observations distributed every 3 hours by WFO Cleveland. An example in Appendix B shows the proper format.

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APPENDIX A - NWS MAFOR Code for the Great Lakes

NWS MAFOR Code for the Great Lakes

**MAFOR YYG₁G₁ (Name of Lake^a) (Watches/Warnings^b) 1GDFmW₁^c
(Precipitation^d) (Ice Coverage^e) (Wave Forecast^f) 2GWv₁Wv₂^g**

MAFOR YYG₁G₁ (Name of Lake^a) (Watch/Warnings Headline^b) 1GDFmW₁^c

Keyword (Indicating Marine Forecast)	Day of the Month	Time Forecast Period Begins (UTC)	Solidus	Name of Lake ^a	Watch/ Warning Headline ^b	@	Forecast Period	Wind Direction	Wind Speed	Forecast Weather
MAFOR	YY	G₁ G₁	/	XXXX	Plain Language	1	G	D	Fm	W₁

(Precipitation^d) (Ice Coverage^e) (Wave Forecast^f) 2GWv₁Wv₂^g

Precipitation ^d	Ice Coverage ^e	Wave Forecast ^f (feet)	@	Forecast Period	Wave Height Range (feet)
Plain Language	Plain Language	Plain Language	2	G	Wv₁Wv₂

G - Forecast Period	D - Wind Direction	Fm - Wind Speed	W₁ - Forecast Weather
0 - Conditions at the beginning of the forecast period 1 - Valid for 3 hours 2 - Valid for 6 hours 3 - Valid for 9 hours 4 - Valid for 12 hours 5 - Valid for 18 hours 6 - Valid for 24 hours 9 - Occasional	0 - Calm 1 - Northeast 2 - East 3 - Southeast 4 - South 5 - Southwest 6 - West 7 - Northwest 8 - North 9 - Variable	0 - 5 to 10 Knots 1 - 10 to 15 Knots 2 - 10 to 20 Knots 3 - 15 to 25 Knots 4 - 20 to 30 Knots 5 - 35 to 40 Knots 6 - 40 to 45 Knots 7 - 50 to 55 Knots 8 - 56 to 63 Knots 9 - over 60 Knots	0 - Moderate or Good Visibility (VSBY) more than 3 nautical miles (n mi) 1 - Risk of accumulation of ice on superstructure (Temp 23° to 32°F) 2 - Strong risk of accumulation of ice on superstructure (Temp below 23°F) 3 - Mist (VSBY 5/8 to 3 n mi) 4 - Fog (VSBY < 5/8 n mi) 5* - Drizzle 6* - Rain 7* - Snow or Rain/Snow mix 8* - Squally weather with or without showers 9* - Thunderstorms * - precipitation group is only included if there is a ≥70% probability of occurrence

^a - MAFORS are issued for Lakes Superior, Michigan, Huron, Erie, and Ontario.

^b - Only one headline is allowed. Headlines are included for Gale and Storm warnings, and Severe Thunderstorm Watches. Note that if a Gale or Storm Warning is in

effect and a Severe Thunderstorm Watch is issued then the Severe Thunderstorm Watch takes precedence and is headlined.

^c - The 1 group may be repeated as many times as necessary to describe changes in wind and weather conditions expected in a given area during a 24-hour forecast period.

^d - Precipitation is included only if there is a 50% or greater chance of occurrence.

^e - Ice coverage is included as appropriate. If ice coverage is included then wave height information is omitted.

^f - Forecast wave height range for valid period of MAFOR (24 hours).

^g - Coded wave height forecast for first 6 hours only.

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Note: The MAFOR code is not an exact duplicate of the plain-language forecast issued in the Open Lake Forecasts issued for each lake. Mariners should refer to the Open Lake Forecast product for the complete forecast.

APPENDIX B - Examples of Great Lakes Marine Products

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6. Marine Monitoring Message	B-8

1. Open Lakes and Coded Marine Forecasts.

FZUS63 KMQT 210727
GLFLS
LSZ260-211400-

OPEN LAKES FORECAST FOR LAKE SUPERIOR
NATIONAL WEATHER SERVICE MARQUETTE MI
327 AM EDT FRI JUL 21 2000

LAKE SUPERIOR FORECAST BEYOND FIVE NAUTICAL MILES FROM SHORE

.SYNOPSIS...HIGH PRESSURE OF 30.1 INCHES OVER THE DAKOTAS WILL BUILD
EAST...REACHING LAKE SUPERIOR BY TONIGHT AND REMAINING ANCHORED OVER
THE WESTERN GREAT LAKES THROUGH SUN MORNING. A STRONG LOW WILL
MOVE IN FROM THE NORTHWEST MON.

WEST HALF

...STORM FORCE WINDS POSSIBLE MON...

.TODAY...W WIND 10 TO 15 KT. WAVES 3 FT. SCATTERED MORNING SHOWERS
TAPERING OFF TO PATCHY AFTERNOON DRIZZLE.

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.TONIGHT AND SAT NIGHT...NW WINDS 5 TO 10 KT. WAVES 2 FT.
.SAT...VARIABLE WIND TO 10 KT. WAVES CALM.
.SUN...SW WINDS INCREASING 15 TO 20 KNOTS. WAVES BUILDING TO 4 FT.
.MON...NW WINDS 55 KT BY AFTERNOON. WAVES 15 FT BY LATE AFTERNOON.
.TUE...NW WINDS 60 KT. WAVES 18 FT. SHOWERS AND THUNDERSTORMS
POSSIBLE.

EAST HALF

.TODAY...W WIND 5 TO 10 KT INCREASING TO 15 TO 20 KT THIS AFTERNOON.
WAVES 3 FT BUILDING TO 5 FT THIS AFTERNOON. SCATTERED MORNING
SHOWERS TAPERING OFF TO PATCHY AFTERNOON DRIZZLE.
.TONIGHT AND SAT NIGHT...NW WIND 10 TO 15 KT. WAVES SUBSIDING TO 3 FT.
.SAT...NW WIND 5 TO 10 KT. WAVES 2 FT.
.SUN THROUGH MON...WINDS BECOMING SW 15 TO 20 KT. WAVES BUILDING TO 5
FT.
.TUE...SW WINDS 35 KNOTS. WAVES BUILDING TO 12 FT BY LATE TUESDAY.
SHOWERS AND THUNDERSTORMS POSSIBLE.

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&&STORM

LSZ261-211400-

MAFOR 2109/

SUPERIOR WEST ½ 14610 14700 SCATTERED MORNING SHOWERS TAPERING TO
PATCHY AFTERNOON DRIZZLE. WAVES 1 TO 3 FEET. 220103.

SUPERIOR EAST ½ 12600 12620 14710 SCATTERED MORNING SHOWERS TAPERING TO
PATCHY AFTERNOON DRIZZLE. WAVES 3 TO 5 FEET. 210203 210305.

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FZUS61 KBUF 031727 AAA

GLFLO

LOZ060-032000-

OPEN LAKE FORECAST FOR LAKE ONTARIO...UPDATED
NATIONAL WEATHER SERVICE BUFFALO NY
1235 PM EST SAT FEB 3 2001

.SYNOPSIS...A LOW HAVING A CENTRAL PRESSURE OF 29.6 INCHES OVER THE
WESTERN GREAT LAKES IS MOVING SLOWER THAN EARLIER EXPECTED. IT WILL
DEEPEN TO 29.4 INCHES AS IT MOVES TO NEAR JAMES BAY BY TUE EVENING. AN

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ASSOCIATED COLD FRONT WILL CROSS LAKE ONTARIO TUE NIGHT WITH A 29.7 INCH LOW FORMING ON THIS FRONT IN PENNSYLVANIA BY TUE EVENING. THE LOW WILL MOVE INTO NEW ENGLAND WED.

...GALE WARNING TONIGHT...

...OCCASIONAL LOW VISIBILITIES IN SNOW...

.REST OF THIS AFTERNOON...SE WINDS 20 TO 25 KT. OCCASIONAL SNOW.

.TONIGHT...SE WINDS INCREASING TO 35 KT. PERIODS OF SNOW.

.SUN...SE WINDS 35 KNOTS INCREASING TO 50 KT SUN EVENING. SNOW.

.SUN NIGHT...SE WINDS 50 KT. SNOW. WAVES IN ICE FREE AREAS 15 FT.

.MON...W WINDS 35 KNOTS. WAVES IN ICE FREE AREAS 12 FT. SNOW SHOWERS.

.TUE...N WINDS 15 TO 20 KT BECOMING SE TUE NIGHT.

.WED...SE WINDS INCREASING TO 35 KT.

WAVES OMITTED FOR MOSTLY ICE COVERED AREAS.

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&&STORM

LOZ061-032000-

MAFOR 0317/ AMD

ONTARIO...GALE WARNING DELAYED...12330 92337 15357 ICE COVERAGE 85 PERCENT.

\$\$

FZUS63 KDTX 061323

GLFSC

LCZ460-062000-

LAKE ST CLAIR FORECAST

NATIONAL WEATHER SERVICE DETROIT/PONTIAC MI

925 AM EDT THU JUL 6 2000

.SYNOPSIS...A RIDGE OF HIGH PRESSURE WILL DOMINATE THE GREAT LAKES THROUGH THE PERIOD. THE CENTER OF THIS RIDGE...30.3 INCHES...WILL CROSS LAKE HURON FRI NIGHT BECOMING STATIONARY JUST EAST OF THE LAKE THROUGH THE WEEKEND.

.THIS AFTERNOON...NE WIND 10 KNOTS OR LESS. PARTLY CLOUDY. WAVES 1 FT OR LESS.

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.TONIGHT THROUGH FRI NIGHT...N WIND KNOTS. CLEAR. WAVES 1 FT.

.SAT THROUGH MONDAY...WINDS CALM. WAVES LESS THAN 1 FT.

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KEYES

2. Nearshore Forecasts:

FZUS53 KMKX 010332

NSHMKE

NEARSHORE MARINE FORECAST

NATIONAL WEATHER SERVICE MILWAUKEE SULLIVAN WI

1000 PM CST TUE OCT 31 2000

FOR WATERS WITHIN FIVE NAUTICAL MILES OF SHORE ON LAKE MICHIGAN

LMZ643>646-011000-

SHEBOYGAN WI TO WINTHROP HARBOR IL

1000 PM CST TUE OCT 31 2000

.REST OF TONIGHT...SE WINDS 10 TO 15 KT. WAVES 2 TO 3 FT. PARTLY CLOUDY.

.WED...SE WINDS 15 TO 20 KT. WAVES 2 TO 4 FT. PARTLY SUNNY.

.WED NIGHT...SE WINDS INCREASING TO 30 KT. WAVES BUILDING TO 4 TO 7 FT.

INCREASING CLOUDS WITH A CHANCE OF SHOWERS...MAINLY LATE.

.THU...SE WINDS 35 KT. WAVES 8 FT. SHOWERS.

SEE LAKE MICHIGAN OPEN LAKES FORECAST FOR FRI THROUGH SUN.

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RIZZO

3. Great Lakes Storm Summary:

FZUS71 KCLE 022133
GLSCLE

SPECIAL GREAT LAKES MARINE STORM REPORT
NATIONAL WEATHER SERVICE CLEVELAND OH
1030 AM EST SUN JAN 16 2000

STORM REPORT NUMBER 3...1030 AM EST JAN 16

A...STORM LOCATION
STRONG STORM 45.2 N 74.4 W (NEAR OTTAWA)

B...STORM MOVEMENT
LOW MOVING NE 20 KT

C...HIGHEST REPORTED SUSTAINED WINDS OVER THE LAST 3 HOURS
AS OF 10AM EST/9AM CST

LAKE	LAT	Lon	LOCATION	DIR/SPD	GUST
SUPERIOR	4655	8738	MARQUETTE CG MI	330/50	65
MICHIGAN	4375	8769	SHEBOYGAN BRKWTR WI	330/40	50
HURON	4472	8327	STURGEON PT MI	280/35	45
	4374	8173	GODERICH ONT	340/30	39
ST CLAIR	4230	8270	BELLE RIVER ONT	320/23	
ERIE	4255	8005	LONG POINT ONT	240/30	
ONTARIO	4322	7922	PORT WELLER ONT	210/20	
	4380	7690	CANADIAN BUOY	270/23	

D...STORM INTENSITY TREND
LITTLE CHANGE NEXT 3 HOURS

E...CURRENT WARNINGS
LAKE SUPERIOR...WARNING - STORM
LAKE HURON...WARNING - STORM
LAKE MICHIGAN...WARNING - GALE

F...REMARKS
NEXT STORM REPORT WILL BE ISSUED BY WFO CLEVELAND AT 1:30 PM EST.
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NWSI 10-312 MAY 21, 2002

GARNET

4. Great Lakes Marine Alert Message:

FZUS61 KCLE 131530

MAWCLE

MARINE ALERT MESSAGE

NATIONAL WEATHER SERVICE CLEVELAND OH

1030 AM EST FRI NOV 13 2000

ALERT...STORM FORCE WINDS (48 KTS OR GREATER) ARE POSSIBLE IN
LAKE(S): SUPERIOR

SEE LATEST OPEN LAKES FORECAST.

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5. Great Lakes Weather Broadcast:

SXUS20 KCLE 071002

OMRGL2

GREAT LAKES MARINE WEATHER BROADCAST
 NATIONAL WEATHER SERVICE CLEVELAND OH
 459 AM EST WED MAR 7 2001

WIND SPEED IN KNOTS..WAVE HEIGHT IN FEET..VISIBILITY IN MILES
 F=FOG H=HAZE R=RAIN S=SNOW L=DRIZZLE T=THUNDERSTORM D=DUST
 Z=FREEZING LAKE

ST.CLAIR	0400 EST	0300 EST
STATION	WIND GUST WAVE VSBY/WX	WIND GUST WAVE VSBY/WX

LAKE ERIE	0400 EST	0300 EST
STATION	WIND GUST WAVE VSBY/WX	WIND GUST WAVE VSBY/WX
Dunkirk Beach NY	240/11 11	240/11 12
Clevlnd Lakeft AP OH	310/15	320/16
Lorain Lighthouse	MMM/MM 0	
South Bass Island O	320/15 16	320/17 19
Fairport Lighthouse	MMM/MM 0	
Rondeau ONT	320/ 8	320/ 9
Long Point ONT	290/13	320/16
London ONT	330/ 8	310/ 8

LAKE ONTARIO	0400 EST	0300 EST
STATION	WIND GUST WAVE VSBY/WX	WIND GUST WAVE VSBY/WX
Galloo Island NY	360/16 20	020/14 17
Burlinton Pier ONT	250/ 4	240/ 4
Cobourg ONT	340/ 3	360/ 3
Trenton ONT	320/ 3	330/ 4
Point Petre ONT	350/10	360/10

...BUOY & SHIP OBSERVATIONS, 0400 EST...

LAT	LO	LOCATION	WIND	GUST WAVE VSBY/WX
43.8	76.9	11 WSW Main Duck Island	340/14 16	01 3/F
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6. Marine Monitoring Message (MARMON):

NOUS71 KCLE 061956
ADAGLM

GREAT LAKES MARINE MONITORING MESSAGE
NATIONAL WEATHER SERVICE CLEVELAND OH
253 PM EST TUE MAR 6 2001 (1954 UTC 03/06/01)

MESSAGE(S) FOR LAKE ERIE

EOIP1 "PRESQUE ISLE LIGHT"
2000Z 3/6/1

Wind speed observed at 10 knots gusting to 16 knots
MAFOR FORECAST: to 35/40 knots (code 5)
(The observed wind direction was 320 degrees)

AWIPS Product: OMRCL. The OMR-type observation is shown here:

EOIP1 3210/ PK WND 16 PRESQUE ISLE

PLAIN LANGUAGE FORECAST FOR THIS LAKE:

LEZ160-062100-

LAKE ERIE FORECAST
NATIONAL WEATHER SERVICE CLEVELAND OH
943A M EST TUE MAR 6 2001

.SYNOPSIS...LOW PRESSURE 28.9 INCHES WELL OFF THE MASSACHUSETTS COAST
WILL CONTINUE TO DRIFT SLOWLY EAST NORTHEAST. A TROUGH EXTENDING
NORTHWEST FROM THE LOW AND AVERAGING 29.8 INCHES WILL LINGER OVER
LAKE ERIE THROUGH WEDNESDAY. LOW PRESSURE 29.8 INCHES WILL MOVE
ACROSS THE NORTHERN LAKES WEDNESDAY NIGHT WITH A TRAILING COLD
FRONT MOVING OVER THE WEST END OF LAKE ERIE LATE WEDNESDAY NIGHT.
LOW MOVING SOUTH OF THE AREA SATURDAY.

WEST HALF

...GALE WARNING IN EFFECT...

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.THIS AFTERNOON...NORTHWEST WIND TO 35 KNOTS. OCCASIONAL SNOW SHOWERS. WAVES IN ICE FREE AREAS 6 TO 8 FEET.

.TONIGHT...NORTH WIND TO 30 KNOTS DECREASING TO 10 TO 20 KNOTS AND BECOMING NORTHWEST. A CHANCE OF SNOW SHOWERS. WAVES IN ICE FREE AREAS SUBSIDING TO 3 TO 5 FEET.

.WEDNESDAY...NORTHWEST WIND 10 TO 15 KNOTS. WAVES IN ICE FREE AREAS SUBSIDING TO 1 TO 3 FEET.

.WEDNESDAY NIGHT...NORTHWEST WIND 10 TO 15 KNOTS BECOMING SOUTHWEST. WAVES IN ICE FREE AREAS 1 TO 3 FEET.

.THURSDAY THROUGH SATURDAY NIGHT...NORTHEAST WINDS 10 TO 15 KNOTS BECOMING SOUTHEAST 15 TO 20 KNOTS SATURDAY. WAVES IN ICE FREE AREAS 1 TO 3 FEET.

EAST HALF

...GALE WARNING IN EFFECT...

.THIS AFTERNOON...NORTHWEST WIND 20 TO 25 KNOTS INCREASING TO 35 KNOTS AND BECOMING NORTH. OCCASIONAL SNOW SHOWERS. WAVES IN ICE FREE AREAS 6 TO 8 FEET.

.TONIGHT...NORTH WIND TO 30 KNOTS DECREASING TO 15 TO 20 KNOTS AND BECOMING NORTHWEST LATE. SCATTERED SNOW SHOWERS. WAVES IN ICE FREE AREAS SUBSIDING TO 3 TO 5 FEET.

.WEDNESDAY...NORTHWEST WIND 10 TO 15 KNOTS. WAVES IN ICE FREE AREAS SUBSIDING TO 1 TO 3 FEET.

.WEDNESDAY NIGHT...NORTHWEST WIND 10 TO 15 KNOTS BECOMING SOUTHWEST. WAVES IN ICE FREE AREAS 1 TO 3 FEET.

.THURSDAY THROUGH SATURDAY...NORTHEAST WINDS 15 TO 20 KNOTS BECOMING SOUTHEAST 15 TO 20 KNOTS SATURDAY. WAVES IN ICE FREE AREAS 1 TO 3 FEET.

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LEZ161-062100-

MAFOR 0616/

ERIE WEST ½...GALE WARNING IN EFFECT...14757 11840 11830 12720. A CHANCE OF SNOW SHOWERS TONIGHT. WAVES IN ICE FREE AREAS 6 TO 8 FEET SUBSIDING TO 3 TO 5 FEET TONIGHT AND TO 2 TO 4 FEET WEDNESDAY MORNING. 220608.

ERIE EAST ½...GALE WARNING IN EFFECT...11737 14857 11847 12820. A CHANCE OF SNOW SHOWERS TONIGHT. WAVES IN ICE FREE AREAS 6 TO 8 FEET SUBSIDING TO 3 TO 5 FEET TONIGHT AND TO 2 TO 4 FEET WEDNESDAY

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MORNING. 220608.

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